

PATENT SPECIFICATION



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COMPLETE SPECIFICATION

Method of Processing Fruits and Vegetables

We, MAGUIRE INDUSTRIES INCORPORATED, a Corporation organised under the Laws of the State of New York, United States of America, of 80, Broadway, in the City, County and State of New York, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to a method of processing vegetables having a fibrous structure and has for its object to provide a method which will permit substantial reconstitution of the food before use.

In specification No. 8111/43 (which is open to public inspection) there is described a method of processing foodstuffs wherein the foodstuff is first refrigerated and then compressed while at refrigerated temperature. The result is an integrated unit of the foodstuff which requires small space for transportation and storage, wherein deterioration is delayed, and wherein valuable fats, oils and low melting point constituents are preserved in the compressed unit.

We have now found that, after dehydration, fibrous fruits and vegetables may be advantageously compressed into an integral unit at an elevated temperature. Examples are cranberries, cabbage flakes, apples, carrots, cauliflower, mixed vegetables, beets and the like.

In order that such processed fruits and vegetables may be satisfactorily reconstituted before being prepared for the table, it is imperative that their structure be not damaged. To this end the critical pressure of each fruit or vegetable must not be exceeded, and a sufficient time must elapse during application of the pressure.

In general, the dehydrated fruit or vegetable is raised to a temperature above room temperature but below the boiling point of water. In most cases it is heated to a temperature of the order of 150° to 165° Fahrenheit. The heated fruit or vegetable is then compressed

under a pressure below that at which its structure breaks down. This is found to be a pressure of from 1500 to 2000 pounds per square inch. The pressure is applied slowly and the full pressure is maintained during a "dwell" period of from 5 to 20 seconds. The resulting block is then removed from the press and wrapped.

The following Examples illustrate the invention.

EXAMPLE 1.

Cranberries were dehydrated in the usual manner and to the usual degree, that is to say until the moisture content was reduced to from 5 to 10%. The dehydrated cranberries were then heated to a temperature of 150° F. A die having a cross section of 4 square inches was filled with the dehydrated, heated cranberries to a depth of about 2½ inches. A punch was then inserted slowly into the die until it imposed a pressure of 1500 pounds per square inch upon the cranberries therein. The punch was held in this position for a "dwell" period of 13 seconds and then removed from the die. The resulting block of cranberries measured 4 square inches in plan and seven-sixteenths of an inch in depth and represented a volume reduction of 84%. The weight of the block was substantially one ounce. Following this, the block was wrapped in a water-resistant material.

Later, the block was unwrapped, placed in a container with two cupsful of boiling water and allowed to stand there for 15 minutes. The block was seen to disintegrate within 3 minutes and the berries rehydrated independently to their original form. At the end of fifteen minutes one cup of sugar was added, the container was placed over a burner and the contents were allowed to simmer for 2 minutes while being constantly stirred. The result was cranberry sauce of a consistency and flavour substantially equal to that produced from fresh cranberries.

EXAMPLE 2.

A quantity of cabbage flakes was dehydrated until the moisture content was reduced to from 5 to 6%. This

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material was heated to a temperature of about 150° F. The dehydrated, heated cabbage was then placed in a suitable die and subjected to a pressure of substantially 1750 pounds per square inch. The resulting block had a density of approximately 44 pounds per cubic foot, the volume reduction being substantially 82%.

It is not necessary to heat the dehydrated fruit or vegetable to high temperatures. A temperature in the neighbourhood of 150° F. will generally suffice. Furthermore, a pressure of from 1500 to 2000 pounds per square inch has been found to be the critical range. Pressures below 1500 pounds per square inch have been found to give insufficient volume reduction for practical application of the process. Pressures above 2000 pounds per square inch tend to damage the structure of the fruit or vegetable.

The descriptions here given, and the particular examples set forth, are presented merely to indicate how the invention may be employed. Other forms, and applications of the invention which come within the proper scope of the appended claims will readily suggest themselves to those familiar with the food processing art.

We are aware that in specification No. 438,509 there is described a process wherein milk powder is intimately mixed with the kernels of cereals or with dried vegetables which are wholly or mainly in the form of flakes and the mixture is pressed into blocks under pressure, the purpose being to hinder rancification of the milk powder. It is stated that to increase the durability of the edges of the block, which readily crumble away, the dies and matrices used for the compression of the blocks are preferably heated, whereby greater strength is imparted to the outer layer of the compressed block. The object of the present invention is not sought in this prior specification and in order to attain this object the fruits or vegetables must be uniformly brought throughout to the desired elevated temperature and must be compressed while still at the elevated temperature at a pressure below that at which its structure breaks down. We have found that by carrying out the

method in the manner we have described it is possible satisfactorily to reconstitute the fruits and vegetables before being prepared for the table.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A method of processing fibrous fruits and vegetables comprising the steps of heating dehydrated fibrous fruits or vegetables to a point above room temperature but below the boiling point of water and compressing the fruits or vegetables while still at an elevated temperature into a block at a pressure below that at which its fibrous structure breaks down.

2. A method as claimed in claim 1 in which the heating is to a temperature between 150° and 165° Fahrenheit.

3. A method as claimed in claim 1 or 2 in which the heated fruit or vegetable is compressed into a block at a pressure between 1500 and 2000 pounds per square inch.

4. A method as claimed in any of claims 1 to 3 in which the dehydrated fruit or vegetable is heated to substantially 150° Fahrenheit and compressed to a compact block under a pressure of substantially 1500 pounds per square inch.

5. A method as claimed in any of claims 1 to 4 in which the fruit or vegetable is dehydrated to a moisture content of between 5 and 10%.

6. A method as claimed in any of claims 1 to 5 in which the fruit is cranberries.

7. The method of processing fibrous fruit or vegetables substantially as described in either of the foregoing Examples.

8. Fibrous fruit or vegetables when processed by the method claimed in any of claims 1 to 7.

Dated this 24th day of May, 1944.

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Reference has been directed in pursuance of Section 8, sub-Section (2), of the Patents and Designs Acts, 1907 to 1942, to Specification Number 557,227.